

**GEMSTONE MOUNT ASSEMBLIES, JEWELRY PIECES
AND METHODS FOR FORMING THE SAME**

Field of the Invention

The present invention relates to jewelry and, more particularly, to gemstone mounts, jewelry pieces, and methods for forming the same.

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Background of the Invention

Gemstones are commonly used in various types of jewelry pieces such as earrings, rings, bracelets, pendants and the like. Such gemstones must be mounted in a secure and attractive manner. It is also desirable to reduce the amount of labor, and particularly skilled and/or delicate craftsmanship, required to assemble 10 such jewelry pieces.

Summary of the Invention

According to embodiments of the present invention, a jewelry piece includes a gemstone mount assembly and a gemstone. The gemstone mount 15 assembly includes a base member defining a base cavity and having first and second opposed ends. The base member tapers from the first end to the second end and defines a base opening in the first end. A bezel member is mounted on the first end of the base member and defines a bezel opening. The bezel member is bonded to the first end of the base member. The gemstone is mounted in the 20 gemstone mount assembly and captured between the base member and the bezel

member. The gemstone is received in the base cavity and extends through the base opening and the bezel opening.

According to further embodiments of the present invention, a gemstone mount assembly for use with a gemstone includes a base member defining a base cavity and having first and second opposed ends. The base member tapers from the first end to the second end and defines a base opening in the first end. A bezel member is mounted on the first end of the base member and defines a bezel opening. The bezel member is bonded to the first end of the base member. The base member and the bezel member are adapted to capture the gemstone therebetween such that the gemstone is received in the base cavity and extends through the base opening and the bezel opening.

According to further embodiments of the present invention, a jewelry piece includes a gemstone mount assembly and a gemstone. The gemstone mount assembly includes a base member defining a base cavity and having first and second opposed ends. The base member tapers from the first end to the second end and defines a base opening in the first end. A bezel member is mounted on the first end of the base member and defines a bezel opening. At least one of a decorative embossment and a decorative cutout is defined in an outer surface of the base member. The gemstone is mounted in the gemstone mount assembly and is captured between the base member and the bezel member. The gemstone is received in the base cavity and extends through the base opening and the bezel opening.

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According to method embodiments of the present invention, a method for forming a jewelry piece includes positioning a gemstone between a base member and a bezel member. The base member defines a base cavity and has first and second opposed ends. The base member tapers from the first end to the second end and defines a base opening in the first end. The bezel member defines a bezel opening. The bezel member is mounted on the first end of the base member such that the gemstone is received in the base cavity and extends through the base opening and the bezel opening. The bezel member is bonded to the first end of the base member.

Objects of the present invention will be appreciated by those of ordinary skill in the art from a reading of the figures and the detailed description of the preferred embodiments which follow, such description being merely illustrative of the present invention.

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Brief Description of the Drawings

Figure 1 is a side, exploded view of a jewelry piece according to embodiments of the present invention;

Figure 2 is a side elevational view of the jewelry piece of **Figure 1**;

Figure 3 is a top plan view of the jewelry piece of **Figure 1**;

20 **Figure 4** is an enlarged, fragmentary, cross-sectional view of the jewelry piece of **Figure 1** taken along the line 4-4 of **Figure 3**;

Figure 5 is a side elevational view of the jewelry piece of **Figure 1** mounted in an ear lobe;

25 **Figure 6** is an enlarged, fragmentary, cross-sectional view of a jewelry piece according to further embodiments of the present invention;

Figure 7 is an enlarged, fragmentary, cross-sectional view of a jewelry piece according to further embodiments of the present invention;

Figure 8 is a side elevational view of a jewelry piece according to further embodiments of the present invention;

30 **Figure 9** is a perspective view of a jewelry piece according to further embodiments of the present invention; and

Figure 10 is a top plan view of a jewelry piece according to further embodiments of the present invention.

Detailed Description of the Preferred Embodiments

The present invention now will be described more fully hereinafter with reference to the accompanying drawings, in which preferred embodiments of the invention are shown. This invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. In the drawings, the relative sizes of regions may be exaggerated for clarity. It will be understood that when an element such as a layer, region or substrate is referred to as being "on" another element, it can be directly on the other element or intervening elements may also be present. In contrast, when an element is referred to as being "directly on" another element, there are no intervening elements present. Terms such as "upper", "top", "front", "lower", "bottom", and "rear" are intended only to indicate relative positions of components and not a particular orientation.

As used herein, "bonded" includes, but is not limited to, welding, soldering and adhering.

With reference to **Figures 1-5**, a jewelry piece **100** according to embodiments of the present invention is shown therein. The jewelry piece **100** includes a gemstone mount assembly **101** according to embodiments of the present invention. The gemstone mount assembly **101** includes a base member **110** and a bezel member **140** bonded to the base member. The jewelry piece **100** is an earring and further includes an earring post **105** and a gemstone **130**. As will be appreciated from the description herein, gemstone mount assemblies according to the present invention may be employed in other types of jewelry pieces such as rings, bracelets, pendants, brooches and body jewelry, and the like. However, as discussed in further detail below, certain embodiments of the present invention may be particularly advantageous when used in and as earrings.

The gemstone **130** may be any suitable or desired gemstone. Suitable gemstones include, for example, diamonds, emeralds, rubies, sapphires, or cubic zirconia. According to certain preferred embodiments, the gemstone **130** is cut so as to include a tapered pavilion or base portion **132** (for example, having a

generally inverted conical shape as shown), a tapered crown or top portion **134** extending upwardly from the base portion **132**, and a crest or girdle **136** located at the interface between the base portion **132** and the crown **134**. Suitable stone shapes or cuts may include those commonly referred to as round, princess cut, pear shape, oval, marquise, radiant, heart shape, emerald cut or triangular cut.

The base member **110** may be formed of any suitable material. For example, the base member **110** may be formed of gold, silver, platinum, or any other metal suitable for manufacturing jewelry. The base member **110** has an upper end **110A** and a lower end **110B**. The base member **110** includes an upper ring **112** at the upper end **110A**. A plurality of legs **114** are distributed (for example, equidistantly) about the ring **112** and each has an upper end secured to the ring **112** (for example, by welding or soldering), and a lower end joined (for example, by welding or soldering) to the lower ends of the other legs **114** at a point or apex **116** at the lower end **110B**. The legs **114** are arranged such that the base member **110** tapers from the upper end **110A** to the lower end **110B** and has a conical outer shape or profile. According to some preferred embodiments, the base member **110** is tapered to form an included angle **B** (Figure 2) of between about 70 and 130 degrees. According to some other embodiments, the angle **B** is between about 130 and 170 degrees. The base member **110** may be truncated (not shown) at its lower end to provide a frusto-conical shape. The ring **112** defines an opening **120** and the base member **110** defines an interior cavity **121** communicating with the opening **120**.

The post **105** is secured to the point **116**, for example, by welding or soldering. The gemstone mount assembly **101** may be used in other types of jewelry pieces by likewise or similarly securing the base member **110** to a ring band, pendant ring or the like. According to some other embodiments, a ring band, pendant ring, earring post or the like is secured, for example, by welding or soldering to the bezel member **140**.

According to some preferred embodiments and as shown, the bezel member **140** is a continuous, endless ring. The bezel member **140** may be formed of any suitable material. Suitable materials may include those discussed above for the base member **110**. The bezel member **140** may have a rounded or otherwise attractive outer contour as shown. According to some preferred embodiments, the

width **W1** (**Figure 3**) of the bezel member **140** is between about 1 and 5 mm. The bezel member **140** defines an opening **142**. The opening **142** is defined by a first annular, interior wall **144** and a second annular, interior wall **146**. The walls **144**, **146** together define a downwardly opening, annular recess **148**. A shoulder **147** 5 overlies the recess **148**. The bezel member **140** defines an entrance inner diameter **D2** and an exit inner diameter **D3**.

- The securement and cooperative engagement between the base member **110**, the gemstone **130** and the bezel member **140** will be better appreciated from the discussion of methods for assembling the jewelry piece **100** as set forth below.
- 10 The gemstone **130** is positioned between the base member **110** and the bezel member **140**. For example, the gemstone **130** may be placed in the base member **110** such that the base portion **132** is received in the cavity **121**. According to some preferred embodiments, the outer diameter **D1** of the ring **112** is less than the outer diameter of the girdle **136** so that the upper part of the base portion **132** rests 15 on the ring **112** and the girdle **136** is disposed above the ring **112**. According to certain preferred embodiments of the present invention, the outer diameter **D1** is between about 0 and 1 mm less than the outer diameter of the girdle **136**. According to certain preferred embodiments of the present invention, the cavity **121** is sized and shaped to fully receive the gemstone **130** to the point of engagement with the ring **112** without interference between the base portion **132** 20 and the legs **114**. For this purpose, the base member **110** may taper at a lesser angle than the base portion **132**. According to some embodiments of the present invention, the angle **A** (**Figure 4**) between the gemstone base portions **132** and the legs **114** is between about 1 and 30 degrees.
- 25 The bezel member **140** is then placed over the base member **110** such that the crown **134** is received through the opening **148**. The diameter **D2** of the opening **142** is greater than the diameter of the girdle **136** while the diameter **D3** of the opening **142** is less than the outer diameter of the girdle **136**. Accordingly, the shoulder **147** surrounds and overlaps an annular portion of the crown **134** to 30 thereby capture the gemstone **130** between the base member **110** and the bezel member **140**. More particularly, in accordance with certain preferred embodiments and as shown, the girdle **136** is captured between the shoulder **147** and the ring **112**. According to certain preferred embodiments, the diameter **D2** is between

about 0.001 mm and 1 mm greater than the diameter of the girdle **136**. According to certain preferred embodiments, the diameter **D3** is at least about 0.25 mm less than the outer diameter of the girdle **136**.

While the above-described method includes mounting the gemstone in the 5 base member **110** and thereafter mounting the bezel member **140** on the base member **110**, the gemstone may alternatively be mounted on the bezel member **140** first and the base member **110** then mounted on the bezel member **140**. Alternatively, the gemstone may be mounted between and in the base member **110** and the bezel member **140** simultaneously with the mounting of the base member 10 **110** and the bezel member **140** to one another.

According to some embodiments, the diameter **D2** of the lower wall **144** is less than the outer diameter **D1** of the ring **112**. The bezel member **140** is forced or press-fitted onto the ring **112** so that the ring **112** and the wall **144** form an interference or friction fit therebetween. This friction fit may serve to hold the 15 components **110, 130, 140** together for ease in executing subsequent assembly steps. Additionally, the friction fit may serve to assist in the permanent securement of the bezel member **140** to the base member **110**. According to certain preferred embodiments, the diameter **D2** is between about 0.001 and 0.1 mm less than the diameter **D1**.

20 After the base member **110**, the gemstone **130** and the bezel member **140** have been assembled as described above, the base member **110** and the bezel member **140** are welded together. More particularly, the wall **144** is welded to the ring **112** such that the bezel member **140** and the base member **110** are immovably fixed or coupled to one another. This welding step is facilitated by the overlap 25 between the components to be welded, providing for secure weld locations. The welds may be continuous or spot welds. According to certain preferred embodiments, the bezel member **140** is laser welded to the base member **110**.

The methods according to the present invention may provide certain further advantages. Because it is not necessary to bend prongs or the like to secure the 30 gemstone **130** within the gemstone mount assembly **101**, the associated high heat (*e.g.*, using a torch) and metal work are not required and heat-sensitive and pressure-sensitive stones can be used without elevated risk of damage or special care. The gemstone mount assembly **101** can be quickly assembled without

requiring significant skill. This is particularly facilitated by the friction fit or interlock between the ring **112** and the bezel member **140**.

The gemstone mount assembly **101** may be particularly advantageous in that the gemstone mount assembly **101** may be formed so as to be relatively light
5 in weight. The gemstone mount assembly **101** and the jewelry piece **100** provide an overall aesthetically pleasing appearance. The bezel member **140** is unobtrusive and may serve as a decorative element. According to some preferred embodiments, the bezel member **140** forms a peripheral edge or flange surrounding the gemstone mount assembly **101**. The shape of the base member **110** can be
10 formed so as to complement the gemstone **130**.

As noted below, the gemstone mount assembly **101** including the tapered base member **110** is particularly well suited for use in an earring. With reference to **Figure 5**, a rear portion **111** of the base member **110** can be easily and comfortably embedded in a wearer's earlobe **E**. As a result, the jewelry piece **100**
15 may give the appearance of a gemstone directly embedded in the wearer's ear **E**, without the presence of a gemstone mount assembly. Even when the jewelry piece **100** is retained only with a conventional earring retainer or back **107**, the embedded earring **100** may tend to stand up as shown, rather than droop as is common with stud-type earrings. This resistance to drooping is particularly
20 facilitated by earrings in accordance with the present invention in that the gemstone mounting assembly **101** may be relatively light and is mechanically supported by the embedded portion **111**.

With reference to **Figure 6**, a jewelry piece **200** according to further embodiments of the present invention is shown therein. The jewelry piece **200**
25 includes a gemstone mount assembly **201** and corresponds to the jewelry piece **100** except as follows. The jewelry piece **200** includes a strip or spots of solder **250** immovably securing the bezel member **240** to the ring **212** and/or the legs **214** of the base member **210**. The method for forming the jewelry piece **200** differs from the method for forming the jewelry piece **100** only in that the step of welding is
30 replaced with a soldering step. Any solder suitable for the type of metal employed may be used.

With reference to **Figure 7**, a jewelry piece **300** according to further embodiments of the present invention is shown therein. The jewelry piece **300**

includes a gemstone mount assembly 301 and corresponds to the jewelry piece 100 except as follows. The jewelry piece 300 includes a strip or spots of adhesive 350 immovably securing the bezel member 340 to the ring 312 and/or the legs 314 of the base member 310. The method for forming the jewelry piece 300 differs from 5 the method for forming the jewelry piece 100 only in that the step of welding is replaced with a step of applying a strip or spots of adhesive. Any adhesive suitable for the metals employed may be used.

With reference to **Figure 8**, a jewelry piece 400 according to further 10 embodiments of the present invention is shown therein. The jewelry piece 400 includes a gemstone mount assembly 401 and corresponds to the jewelry piece 100 except as follows. The gemstone mount assembly 401 includes a base member 410 corresponding to the base member 110, except that the base member 410 includes a substantially solid cup 415 defining an opening and an interior cavity corresponding to the opening 120 and the interior cavity 121 of the base member 15 110. The cup 415 is generally conical and a post 405 is secured to the lower apex of the cup 415. The bezel member 440 is secured in the manner described above to the upper rim of the cup 415 or to a ring corresponding to the ring 112, which may be welded or otherwise secured to the upper rim of the cup 415. An optional decorative pattern or indicia 418 may be embossed in the cup 415. The 20 embossment 418 may include, for example, a brand designation.

With reference to **Figure 9**, a jewelry piece 500 according to further 25 embodiments of the present invention is shown therein. The jewelry piece 500 includes a gemstone mount assembly 501 and corresponds to the jewelry piece 400 except as follows. The base member 510 includes a hollow cup 515 corresponding to the cup 415, except that the cup 515 is pyramid-shaped. According to certain preferred embodiments, the cup 515 is substantially fully pyramid-shaped, but alternatively may be frusto-pyramidally shaped. The ring 540 is square to accommodate the square upper rim of the base member 510. The gemstone mount assembly 501 is adapted to accommodate a gemstone 530 having a square crown 30 534. The gemstone mount assembly 501 includes a cut out 518 in the cup 515. The cutout 518 communicates with the interior cavity of the base member 510 so that the base portion 532 of the gemstone 530 is exposed therethrough. The cutout

518 may be in the shape of any suitable pattern or indicia, for example, as described above with regard to the embossment **418**.

With reference to **Figure 10**, a jewelry piece **600** according to further embodiments of the present invention is shown therein. The jewelry piece **600** includes a gemstone mount assembly **601** and corresponds to the jewelry piece **100** except as follows. The jewelry piece **600** includes a gemstone **630** having an oval crown **634**. The bezel member **640** and the base member (not shown) are likewise suitably oval to accommodate the oval gemstone **630**.

Various of the features and aspects described above may be combined. For example, the gemstone mount assembly **101** may be modified to include a pyramidal base member and a square bezel ring as in the gemstone mount assembly **501**. The embossments and cutouts may be formed in base member cups of various shapes (*e.g.*, pyramidal, conical, oval, etc.). The bezel members and base members of the various gemstone mounting assemblies of the present invention can be bonded by any suitable means such as welding, soldering and adhering. However, according to certain embodiments, welding is preferred because it eliminates the presence of solder or adhesive that may adversely affect the appearance of the mount and/or the gemstone.

The foregoing is illustrative of the present invention and is not to be construed as limiting thereof. Although a few exemplary embodiments of this invention have been described, those skilled in the art will readily appreciate that many modifications are possible in the exemplary embodiments without materially departing from the novel teachings and advantages of this invention. Accordingly, all such modifications are intended to be included within the scope of this invention. Therefore, it is to be understood that the foregoing is illustrative of the present invention and is not to be construed as limited to the specific embodiments disclosed, and that modifications to the disclosed embodiments, as well as other embodiments, are intended to be included within the scope of the invention.